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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,663	03/18/2004	Masuhiko Natsuhara	39.035	2662

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EXAMINER
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PAIK, SANG YEOP

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 07/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/708,663

Applicant(s)

NATSUHARA ET AL.

Examiner

Sang Y. Paik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-15 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-5 and 7-15 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1/10/06.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 and 7-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al (WO 02/084717) in view of Nozaki et al (US 5,264,681), Chen (US 6,423,949), and Fure et al (US 6,753,507).

Ito shows the ceramic susceptor claimed a laminate ceramic susceptor including concentric circular resistive-heating elements circuit formed therein to heat discrete heating zones. Ito further shows a lead circuit (58) circuit formed non planar with the heating element for supplying electric power to the resistive-heating element, the electrodes (63) connected to the lead circuit at roughly center of the ceramic susceptor, and a shaft joined to the backside of the susceptor (also see Figures 10 and 11). But, It does not show the lead circuit having resistance smaller than the resistance of the heating element, the shaft having a thermal conductivity lower than the susceptor ceramic, and the front side of the susceptor having a planarity of 0.5 mm or less.

Nozaki shows a ceramic heater with a heating element with lead circuit (18) connected to the heating portion. Nozaki teaches that the lead circuit is made with wider width such that the resistance in the lead circuit is reduced which in turn would reduce heating generated therein. Nozaki further shows that it is well known in the art that the ceramic heater is made with the ceramic substrate containing AlN with sintering aids such as yttrium oxide with 2 weight percent

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to provide for a thermally stable heater. In view of Nozaki, it would have been obvious to one of ordinary skill in the art to adapt Ito with the lead circuit having smaller resistance to reduce any heat that would be generated thereto, and further provide the ceramic susceptor made of AlN with sintering aids such as yttria to provide a thermal stable heater which can withstand a high heating temperature.

Chen shows a ceramic susceptor made of AlN, heating elements, and a support shaft made of AlN but with lower thermal conductivity than that of the susceptor. Chen also shows that the thickness of the susceptor is 1.728 cm which meets the claimed susceptor thickness of 5 mm or more. In view of Chen, it would have been obvious to one of ordinary skill in the art to adapt Ito with the support shaft having a lower thermal conductivity so that the heat generated by the heating elements is confined or contained with the susceptor and that the heat would not be lost through the support shaft by conduction.

Fure shows a ceramic susceptor made of AlN, having a thickness of 2-8 mm for supporting and heating a semiconductor wafer. Fure shows that the wafer retaining heating surface has the flatness of 100 microns or lower which meets the claimed planarity range of .5 mm or less. Furthermore, Fure shows that the ceramic substrate is further added with yttrium oxide as the sintering aid. In view of Fure, it would have been obvious to one of ordinary skill in the art to adapt Ito with the object such as wafer retaining side having a flatness or planarity of .5 mm or less so that heat can be more uniformly generated to heat the wafer.

With respect to claim 5, Ito as modified by Fure which shows substantially claimed structure including the object retaining side with the planarity of .5 mm or less, would inherently possess the claimed temperature uniformity as being the inherently properties or functions.

*Response to Arguments*

3. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y. Paik whose telephone number is 571-272-4783. The examiner can normally be reached on M-F (9:00-4:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Sang Y Paik  
Primary Examiner  
Art Unit 3742

syp